

REMARKS

This is in response to the Office Action of February 24, 2009. As required by the Examiner, generic terminology has been provided for certain trademarks/trade names recited in the specification. The feature recited in original claims 4-6 is incorporated into independent claims 1 and 3, and claims 4-6 are accordingly cancelled, without prejudice. New claims 11 and 12 are based upon such disclosure as that in the last full paragraph on page 14 of the specification. New claims 13 and 14 limit the surfactant in preceding claims to silicon-based surfactant (e1). New claim 15 limits the surfactant in preceding claims to fluorine-based surfactant (e2). No new matter is introduced by this Amendment. Claims 1-3 and 7-15 are now pending in the application.

Restriction

Applicant respectfully requests reconsideration of and withdrawal of the requirement for restriction. The two inventions as grouped are characterized by unity of invention. As explained in detail hereinbelow, the heat-curable resin compositions of Group I and or Group II – as the relevant claims are amended herein – all possess both novelty and non-obviousness. These compositions clearly now recite a common special technical feature – which involves incorporation of the specified surfactant into the compositions. Accordingly, they relate to a single general inventive concept under PCT Rule 13.1. Regarding the restriction requirement, since the compositions of claim 1 and 3 are patentable due to the above amendments, the two invention-groups possess a single general inventive concept. Moreover, clarification is needed with respect to the status of claims 7-10. The Examiner kindly included claims 7-10 within elected Group II, yet the Office Action Summary page indicates that claims 7-10 are withdrawn from consideration. It is respectfully submitted that all of claims 1-3 and 7-15 currently pending in this application should be examined on their merits.

Specification

As required by the Examiner, generic terminology has been provided for

trademarks/trade names recited in the specification.

Issues under 35 U.S.C. § 112

On pages 3-4 of the Office Action, the Examiner makes two formal rejections. With regard to “a hydrocarbon group of a valence k,” Applicant respectfully points out that the variable k in formula (2) recited in the claims indicates from 1-10 substituent groups which may be attached to group R¹ shown in the formula. With regard to the issue regarding the term “may” in claim 3, Applicant has amended the language “at least one of R¹ and R² may represent a residue” to read “at least one of R¹ and R² represents a residue” in order to avoid possible misunderstanding. It is respectfully submitted that the claims in their current form comply with the requirements of the statute.

Issues under 35 U.S.C. § 102

On pages 4-11 of the Office Action, claims 3 and 6-10 were rejected as being anticipated by each of four different references: Yamamura (Office Action pages 4-6); Nomiyama (Office Action pages 6-8); Fujiwa (Office Action, pages 8-10); and Barbe (Office Action, pages 10-11). In each case, the rejection was made because the Examiner considered that an alicyclic epoxy compound as required by the claims, along with a cationic polymerization initiator, is disclosed in the reference. Applicant respectfully submits that this ground of rejection has been overcome by specifying that surfactant (e), formerly mentioned in the claims as optional, is now a required part of the recited compositions.

Issues under 35 U.S.C. § 103

On pages 12-17 of the Office Action, claims 3 and 6-10 are rejected as being unpatentable over two combinations of references: Fujiwa in view of Takai (Office Action, pages 12-14) and Barbe in view of Takai (Office Action, pages 14-17). The Fujiwa and Barbe references each discloses an alicyclic epoxy compound, along with a cationic polymerization initiator. Neither Fujiwa nor Barbe discloses the surfactants recited in claim 6. However, Takai allegedly discloses that type of surfactant. The Examiner contends that persons of ordinary skill

in the art would have an expectation that the Takai surfactants could be successfully incorporated into the Fujiwa and Barbe compositions. Applicant respectfully traverses these rejections, for reasons explained below.

The chart set forth below compares features of Applicant's compositions as recited in claim 3 to corresponding features in the various cited references. The bolded cells in the table indicated key areas of differentiation between the present invention and the references.

	Present application	Fujiwa	Barbe	Takai
Alicyclic epoxy compound	CEL2081	CEL2081	CEL2081	<i>Not mentioned</i>
Cationic polymerization initiator	SI100L (aromatic sulfonium salt)	e.g., aromatic sulfonium salt	e.g, aromatic sulfonium salt	SI100L (aromatic sulfonium salt)
Surfactant	FC430 BYK333	<i>Not mentioned</i>	<i>Not mentioned</i>	Silicon-based surfactant
Effect	<ul style="list-style-type: none"> ➤ Little warping of the flexible film ➤ Low shrinkage in curing 	Excellent in <ul style="list-style-type: none"> ➤ Adhesiveness ➤ Bending resistance 	Excellent in <ul style="list-style-type: none"> ➤ Adhesiveness ➤ Solvent resistance ➤ Bending resistance 	<i>Excellent in</i> <ul style="list-style-type: none"> ➤ <i>Moisture and heat resistance</i> ➤ <i>Transparency</i>

As can be seen, surfactants are not mentioned in the primary references, Fujiwa and Barbe. In contrast, the invention presently claimed requires a surfactant, which is “a silicon-based surfactant (e1) having a dimethylsiloxane skeleton and/or a fluorine-based surfactant (e2) having hydrophobic groups of a hydrocarbon-based surfactant entirely or partially substituted with fluorine atoms.”

Takai discloses a liquid resin composition comprising an alicyclic epoxy compound and silicon-based surfactant, while Fujiwa and Barbe disclose a heat-curable resin composition comprising an alicyclic epoxy compound. The Examiner contends that it is obvious for one of

ordinary skill in the art to incorporate any of the silicon-based surfactants taught by Takai into the compositions of Fujiwa and Barbe.

In Applicant's Example 1, a heat-curable resin composition containing 100 parts of the alicyclic epoxy resin CEL2081, 0.6 part of SI100L, and 0.1 part of BYK333 (silicon-based surfactant) showed the remarkable effect of warping only 15 mm or less in a measurement method A and 6 mm or less in a measurement method B. Similarly, in Example 2, a resin composition prepared in the same manner except for the use of FC430 (fluorine-based surfactant) in place of BYK333 showed a remarkable reduction in warping effect. The remarkable effects demonstrated in Applicant's Examples 1 and 2 were provided by the use of silicon-based and fluorine-based surfactants as the surfactant.

In contrast, while Takai teaches that an additive such as silicon-based defoamers (surfactants) can be added to the liquid epoxy resin, Takai provides no description of a desirable **relevant** concrete effect which could be obtained by using such surfactant. Takai discloses the following: "The lubricity-imparting agent is added for the purpose of improving lubricating property of a coating film obtained, and examples thereof include waxes such as fatty acid ester waxes that are an esterified product of polyol compound and fatty acid, silicone waxes, fluorine waxes, polyolefin waxes, animal waxes or vegetable waxes." Paragraph [0160]. This "shot gun" disclosure does not provide a rationale for modifying the Fujiwa or Barbe compositions.

Further, Takai teaches that an epoxy resin composition comprising an alicyclic epoxy compound not having an ester linkage can overcome the problem sought to be solved by the Takai invention, by providing excellent moisture and heat resistance and transparency. Paragraph [0021].

In contrast, the present application provides a heat-curable resin composition comprising an alicyclic epoxy compound having a polyester chain, which provides a significant improvement in warping of a flexible film made therefrom. The present application also teaches that having a polyester chain in the composition is a significant feature. Page 4, second full paragraph.

In summary, the present application differs significantly from Fujiwa, Barbe, and Takai in at least the following respects:

- whether the concrete explanation of the surfactant is described or not;
- whether the alicyclic epoxy compound contains an ester linkage or not; and
- whether the issue of warping of a flexible film is included in technical problem being addressed in the reference.

Accordingly, Applicant respectfully submits that the rejection of independent claim 3 based upon the (unmotivated) combination of Takai with Fujiwa or Barbe is overcome. The same considerations – based upon the surfactant feature of the present invention – likewise applies to independent claim 1. Withdrawal of the obviousness rejections of record with respect to any of claims 1-3 and 7-15 is in order and is earnestly solicited.

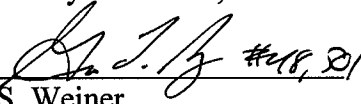
Contact information

Please contact Richard Gallagher, Registration No. 28,781, at (703) 205-8008 with any questions concerning this application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fee required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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